Duquesne Light

Nuclear Group
P.O. Box 4
Shippingport, PA 15077-0004

Telephone (412) 393-6000

January 17, 1991
ND3MNO:3092

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
LER 90-020-00

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

In accordance with Appendix A, Beaver Valley Technical Specifications, the following Licensee Event Report is submitted:

LER 90-020-00, 10 CFR 50.73.a.2.i.B, "Computer Failure Causes Inoperable Flux Difference Monitor".

Very truly yours,

T. P. Noonan
General Manager
Nuclear Operations

DC/sl

Attachment

IE22
1/1

cc: Mr. T. T. Martin, Regional Administrator
United States Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406

C. A. Roteck, Ohio Edison
76 S. Main Street
Akron, OH 44308

Mr. A. DeAgazio, BVPS Licensing Project Manager
United States Nuclear Regulatory Commission
Washington, DC 20555

J. Beall, Nuclear Regulatory Commission,
BVPS Senior Resident Inspector

Larry Beck
Cleveland Electric
6200 Oak Tree Blvd.
Independence, Ohio 44101

INPO Records Center
Suite 1500
1100 Circle 75 Parkway
Atlanta, GA 30339

G. E. Muckle,
Factory Mutual Engineering
680 Anderson Drive #BLD10
Pittsburgh, PA 15220-2773

Mr. J. N. Steinmetz, Operating Plant Projects Manager
Mid Atlantic Area
Westinghouse Electric Corporation
Energy Systems Service Division
Box 355
Pittsburgh, PA 15230

Mr. Richard Janati
Department of Environmental Resources
P. O. Box 2063
16th Floor, Fulton Building
Harrisburg, PA 17120

Director, Safety Evaluation & Control
Virginia Electric & Power Co.
P.O. Box 26666
One James River Plaza
Richmond, VA 23261

W. Hartley
Management Analysis Company
112671 High Bluff Drive
San Diego, CA 92130-2025

J. M. Riddle
NUS Operating Service Corporation
Park West II
Cliff Mine Road
Pittsburgh, PA 15275

NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92
ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Beaver Valley Power Station Unit 1	0 5 0 0 0 3 3 4	1 OF 0 4

TITLE (4)
Computer Failure Causes Inoperable Flux Difference Monitor

EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR		SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
1 2	1 7	9 0	9 0	–	0 2 0	– 0 0	0 1	1 7	9 1	N/A	0 5 0 0 0
											0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.406(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.406(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.406(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.406(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.406(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
T.P. Noonan, General Manager Nuclear Operations	4 1 2 6 4 3 – 1 2 5 8

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
X	I D	C P U	W 1 2 0	N							

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On 12/17/90 at 1030 hours, a review of the P250 plant computer logs determined that on 12/13/90 at 1030 hours, a memory allocation error had occurred in computer operation. This error had persisted until the computer was rebooted on 12/15/90 at 0207 hours. During this time, all the computer's averaged plant parameter values were inaccurate. Plant procedures use several of these averaged values to verify compliance with Technical Specification requirements for the secondary heat balance and the reactor's axial flux difference. On 12/17/90, operators verified that the routines to calculate these averaged values were functioning properly. Operators had only performed one secondary heat balance calculation during the period when the averaged data was inaccurate. The station reevaluated this heat balance using logged accurate data for that period and verified that no thermal or operational limits were exceeded. A similar review of logged values for axial flux verified a stable flux distribution during this event. The station has initiated a procedure to verify proper computer operation prior to using data from the P250 for Technical Specification required calculations. There were no safety implications due to this event as all plant parameters remained within their Technical Specification required ranges.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Beaver Valley Power Station Unit 1	0 5 0 0 0 3 3 4	9 0	0 2 0	0 0	0 2 OF 0 4

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Description of Event

On 12/15/90 at 0207 hours, operations personnel reviewing the P250 plant computer logs observed that the some computer points were remaining constant and not exhibiting normal statistical fluctuation. Operators have been trained to check for this fluctuation as a means of verifying proper computer operation. Personnel rebooted the computer and verified that all points were displaying normal minor variations. The operators requested the computer engineer to investigate and find the cause of this behavior.

On 12/17/90 at 1030 hours, the computer engineer determined that at 1030 hours on 12/13/90 a memory allocation error had occurred on the computer, causing Task 3D "Averaging and Integrating" to abort. This did not affect the computer points that represent real-time plant parameters. This memory allocation error did affect computer points that were moving averages of plant parameter values, causing them to be inaccurate. This condition remained in effect until 12/15/90 at 0207 hours when operators rebooted the computer and Task 3D restarted.

Task 3D determines an average value for a given plant parameter over a period of time, typically one mirute. Averages of this type provide the operators with values for plant parameters that are free of extremely short term variations and noise effects. These averages are inputs to several plant performance calculations, including the Technical Specification required daily secondary heat balance and reactor axial flux difference monitoring.

Cause of Event

Investigation by the computer engineering department determined that Task 3D was aborted due to a dynamic memory allocation problem. This apparently occurred when the computer attempted to perform Task 3D while insufficient memory was available due to the large number of other active programs.

Previous Similar Events

Review of station documents showed one previous similar event (Unit 1 LER 90-006-00) where the P250 failed, causing the secondary heat balance calculation to become inoperable. As a corrective action for this previous event, operators were trained to verify correct computer operation by observing statistical fluctuation of computer points. This current event was discovered on 12/15/90 by operators attempting verify such fluctations. However, it was discovered during this event that minor variations of computer point values may occur even though the averaging function is not in peration. Such minor variations are typically an order of magnitude less than the normal statistical fluctuations.

Corrective Action

1) Using data from the Plant Variable Computer, a separate computer that operates parallel to the P250, secondary heat balances were performed for the period when the P250 was inaccurate. These calculations verified that all plant parameters remained within their required thermal and operational limits during this event.

2) Using non-averaged data from the P250, a review of the axial flux performance was performed for the time when the P250 averaging circuit was not operating. This review verified that axial flux was stable and did not significantly change during this period.

3) The station has written a procedure to allow the operators to verify P250 operability at the programmer's console. The operators are required to perform this procedure prior to using the P250 to obtain any data to be used in Technical Specification required calculations.

4) Additionally, the station has initiated a design change to replace the P250 computer with a computer of modern design. The new computer is scheduled to be installed during Unit 1's Eighth Refueling Outage which begins in late April of this year.

Reportability

This report is being submitted under the requirements of 10CFR50.73.a.2.i.B, an event that involved a condition prohibited by the station's Technical Specifications.

Safety Implications

There were no safety implications due to this event. Review of station records show that all plant parameters remained within their Technical Specification required ranges throughout this event.